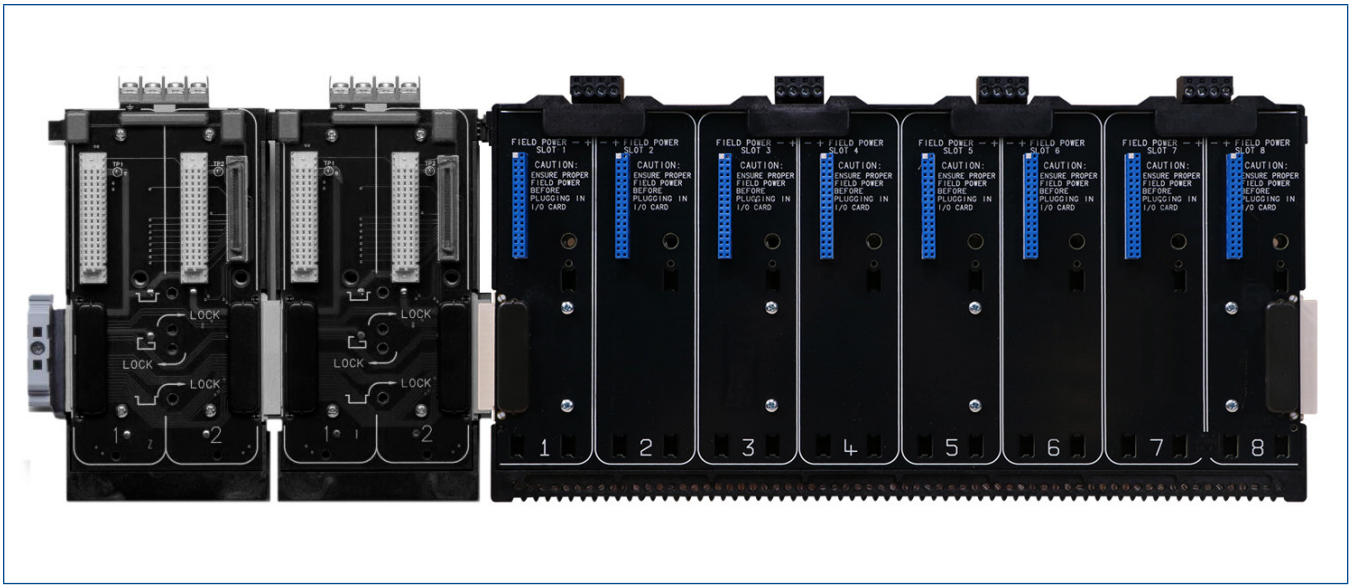
| Model | Ref. Fig. 1 | Description | Removal or Insertion with System Power Energized | Key Pos. | Field Circuit Class For Definitions please refer to Item 10. |
|---|---|---|---|---|---|
| KJ3222X1 - BA1 | G | Analog Input Card with HART, Series-2 2-Wire | YES[1] | A 1 | Energy limited field circuits Uo = 28.7V, Io = 33mA, Po = 607mW Co=.17uF, Lo=11mH |
| | | Analog Input Card with HART, Series-2 4-Wire | YES[1,2] | | NON-SPARKING |
| KJ3222X1 - EA1 | C | Redundant Analog Input Terminal Block | N/A | | N/A |
| KJ3223X1 - BA1 | G | Analog Input, 16-Channel 4-20mA, 2-Wire with HART, Series-2 | YES[1] | A 2 | Energy limited field circuits Uo = 28.7V, Io = 33mA, Po = 607mW Co=.17uF, Lo=11mH |
| KJ3223X1 - EA1 | C | 16-Channel Analog Terminal Block | N/A1 | | N/A |
| KJ3224X1 - BA1 | G | Thermocouple Card 8 Channel, Series-2 | YES[1] | C 1 | Energy limited field circuits Uo = 5.5, Io = 0.3mA/Ch, 0.3 mA/Card Po = 0.8mW Co=1000µF, Lo=1000mH |
| KJ3224X1 - EA1 | C | Series-2 Thermocouple Terminal Block | N/A | | N/A |
| KJ3225X1 - BA1 | G | RTD Card 8 Channel, Series-2 | YES[1] | C 1 | Energy limited field circuits Uo = 5.5, Io = 0.6mA/Ch, 4.8 mA/Card Po = 0.4mW Co=1000µF, Lo=1000mH |
| KJ3231X1 - BA1 | H | Isolated Analog Input Card, Series-2 | NO | C 2 | Energy limited field circuits Uo = 5.5, Io = 0.3mA/Ch, 0.3 mA/Card Po = 0.8mW Co=1000µF, Lo=1000mH |
| KJ3231X1 - EA1 | C | Isolated Terminal Block | N/A | | N/A |
| KJ3241X1 - BA1 | H | Serial Interface Card, Series-2 | NO | D 4 | NON-SPARKING |
| KJ3241X1 - EA1 | C | Redundant Serial Interface Terminal Block | N/A | | N/A |
| KJ3242X1 - BA1 | H | Fieldbus H1 Card, Series-2 | NO | D 6 | Energy limited field circuits Ui = 40, Ii = 165 mA, Ci = 0.022 uF, Li = 480 uH Pi = 520mW (Groups A, B, C, D) [3] Ui = 40, Ii = 225 mA, Ci = 0.022 uF, Li = 480 uH (Groups A, B) [3] |
| | | When used with KJ3242X1-GA1 Term. Block | | | NON-SPARKING |
| | | When used with KJ3242X1-HA1 Term. Block | | | NON-SPARKING |
| KJ3242X1 - GA1 | C | Simplex H1 Terminal Block | N/A | D 6 | NON-SPARKING |
| KJ3242X1 - HA1 | C | Redundant H1 Terminal Block | N/A | D 6 | NON-SPARKING |
| KJ3242X1 - EA1 | C | Simplex Fieldbus H1 Terminal Block | N/A | D 6 | N/A |
| KJ3242X1 - FA1 | C | Redundant Fieldbus H1 Terminal Block | N/A | D 6 | N/A |
| KJ3243X1 - BA1 | H | Profibus DP Card Series 2 | NO | D 3 | NON-SPARKING |
| KJ3243X1 - BB1 | H | Redundant Profibus DP Card, Series 2 | NO | D 3 | NON-SPARKING |
| KJ3243X1 -EA1 | C | Redundant Profibus Terminal Block | N/A | D 3 | NON-SPARKING |
| KJ3244X1 - BA1 | H | DeviceNet Card Series 2 | NO | D 5 | NON-SPARKING |
| KJ3245X1 - BA1 | H | AS-i Card, Series 2 (-25°C to +70°C) | NO | D1 | NON-SPARKING |
| KJ4001X1 - BA2 | A | 2 wide Carrier | NO | N/A | N/A |
| KJ4001X1 - BA3 | A | 2 wide Carrier | NO | N/A | N/A |
| KJ4001X1 - BB1 | B | 8-Wide I/O Interface Carrier | NO | N/A | N/A |
| KJ4001X1 - BE1 | B | 8-Wide I/O Interface Carrier with Shield Bar | NO | N/A | N/A |
| KJ4001X1 - BH1 | A | 2-Wide Power Carrier | NO | N/A | N/A |
| KJ4001X1 - CA1 | C | I/O Terminal Block | N/A | | N/A |
| KJ4001X1 - CB1 | C | Fused I/O Terminal Block | N/A | | N/A |
| KJ4001X1 - CC1 | C | 4- Wire I/O Terminal Block | N/A | A 1 | N/A |
| KJ4001X1 - CD1 | C | Mass Termination 10 Pin Assembly | N/A | B 6 | N/A |
| KJ4001X1 - CE1 | C | Mass Termination 16 Pin Assembly | N/A | A 1 | N/A |
| KJ4001X1 - CF1 | C | Mass Termination 24 Pin Assembly | N/A | A 1 | N/A |

# DeltaV™ M-series I/O Subsystem Horizontal Carriers




*The DeltaV™ modular I/O subsystem is easy to install and maintain.*

- Modular design allows flexible installation
- Allows you to expand online
- Integrated power distribution

## Introduction

Get your I/O subsystem up and running efficiently with the DeltaV™ horizontal mount I/O carriers. The power/controller carrier contains internal power buses. You don't need to use external cabling to connect the system power supply to the DeltaV controller and the I/O interface carriers.

The power/controller and I/O carriers are modular. Purchase only what you need but be assured that as your system grows you can add plug-and-play carriers—Easy!

## Benefits

**Modular design allows flexible installation.** A T- type DIN rail is all you need to mount the power/controller carrier into place. The I/O interface carrier plugs on to the power/controller carrier. Simply plug your I/O terminal blocks into the carrier. The DeltaV system's modular design approach allows you to add I/O carriers as you need them.

**Allows you to expand online.** Additional 8-wide carriers may be added online as desired. Carrier extenders give you the flexibility to install I/O carriers in multiple rows with 1,2, 3 or 4 carriers per row.

**Integrated power distribution.** Controller and I/O interface power distribution is integrated into the carriers to reduce and simplify power and grounding. Carriers also have integrated shield ground bar to isolate and drain field noise away from system power.

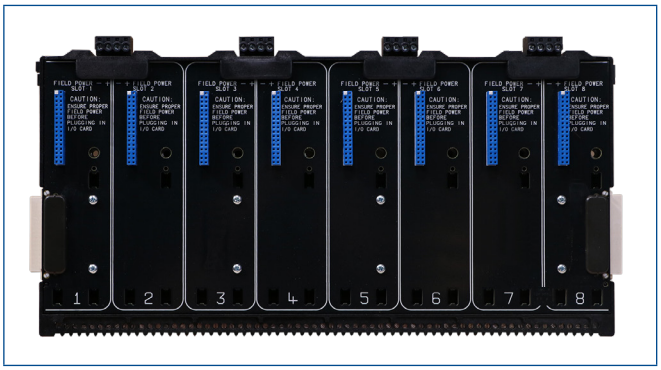


*The DeltaV horizontal-mount carriers provide plug-and- play ease for your I/O subsystems.*

## Product Description

The I/O interface carrier plugs on to the power/controller carrier. The power/controller carrier supplies the system power and communications between the I/O interfaces and the controller. The controller processes the I/O interface information. An additional power/controller carrier is required for use with redundant controllers.

Mount your interface carrier on a T-type DIN rail. The I/O interface carrier includes the connections for the bulk 24 V DC field instrument power, I/O interfaces, and terminal blocks. Each I/O interface carrier is equipped with a connector that allows an additional I/O interface carrier to be plugged on to it. Up to 64 I/O interfaces on eight 8-wide I/O interface carriers are supported by a single I/O subsystem. For the horizontal-mount solution, 1-wide local bus extenders allow you to continue the I/O bus on a different row of carriers. There are two types of 8-wide I/O interface carriers available. They both have connectors for field power on the top of the carrier. The original carrier connects each set of field power terminals to two I/O cards, and the other option have individual field power per card slot and is ideal if separate field power is required for redundant I/O cards.



*The DeltaV horizontal-mount 8-wide I/O interface carrier with individual field power per I/O card.*

## Hardware Specifications

| Specifications for the I/O Subsystem Horizontal Carriers | | |
|---|---|---|
| **2-Wide Power/Controller Carrier** | | |
| Capacity | One system power supply and one controller or two system power supplies | |
| **Dimensions** | **Centimeters** | **Inches** |
| Height | 16.5 | 6.5 |
| Width | 8.4 | 3.3 |
| Depth | 3.1 | 1.2 |
| Connector to connector width | 9.1 | 3.6 |
| **8-Wide I/O Carrier with field power per two I/O cards Specifications** | | |
| Capacity | Eight I/O cards and eight terminal blocks | |
| **Dimensions** | **Centimeters** | **Inches** |
| Height | 16.5 | 6.5 |
| Width | 33.6 | 13.2 |
| Depth | 3.1 | 1.2 |
| **Current Ratings** | | |
| Backplane | 8 A max (supplied to I/O cards) | |
| Bussed field power bus | 6.5 A max (supplied to field terminals) per two I/O cards | |
| **8-Wide I/O Carrier with separate field power for each I/O cards Specifications** | | |
| Capacity | Eight I/O cards and eight terminal blocks | |
| **Dimensions** | **Centimeters** | **Inches** |
| Height | 16.9 | 6.7 |
| Width | 33.6 | 13.2 |
| Depth | 3.1 | 1.2 |
| **Current Ratings** | | |
| Backplane | 8 A max (supplied to I/O cards) | |
| Bussed field power bus | 3.2 A max (supplied to field terminals) per I/O card | |

| 4-Wide I/O Carrier Specifications | | |
|---|---|---|
| Capacity | Four I/O cards and four terminal blocks | |
| **Dimensions** | **Centimeters** | **Inches** |
| Height | 16.9 | 6.7 |
| Width | 17.0 | 6.7 |
| Depth | 3.1 | 1.2 |
| **Current Ratings** | | |
| Backplane | 8 A max (supplied to I/O cards) | |
| Bussed field power bus | 3.2 A max (supplied to field terminals) per I/O card | |
| **1-Wide I/O Carrier Extender (Left and Right) Specifications** | | |
| Capacity | Single or dual cables with SIS safety bus coax cables | |
| **Dimensions** | **Centimeters** | **Inches** |
| Height | 16.5 | 6.5 |
| Width | 4.2 | 1.7 |
| Depth | 3.1 | 1.2 |
| **Current Ratings** | | |
| Backplane | 8 A max (supplied to I/O cards) | |
| Injected Power connector (Left extender only) | 8 A max (supplied to I/O cards) | |

| Environmental specifications (All Carrier components) | |
|---|---|
| Operating temperature* | -40 to 70°C (-40 to 158°F) |
| Storage temperature | -40 to 85°C (-40 to 185°F) |
| Relative humidity | 5 to 95%, non-condensing |
| Airborne contaminants | ISA-S71.04-1985 Airborne Contaminants Class G3<br>Conformal coating |
| Shock (normal operating conditions) | 10 g ½-sine wave for 11 ms |
| Vibration (operative limit) | 1 mm peak-to-peak from 5 Hz to 16 Hz,<br>0.5 g from 16 Hz to 150 Hz |

**Operating any electronics at the higher end of its temperature range for long periods of time will shorten its expected lifetime, see **Effects of Heat and Airflow Inside an Enclosure White Paper** for more information.*

## Certifications

The following certifications are available on the M-series Horizontal Carriers.

- **CE:**

  EMC: EN 61326-1

- **FM:**

  FM 3600

  FM 3611

- **CSA:**

  CSA C22.2 No. 213

  CSA C22.2 No. 61010-1

- **ATEX:**

  EN 60079-0

  EN 60079-7

  EN 60079-15

- **Marine Certifications: IACS E10**

  ABS Certificate of Design Assessment

  DNV Type Approval Certificate

## Hazardous Area/Location

The M-series Horizontal Carriers can be installed and used based on the following Standards: (see actual certificates for exact product markings for each product)

- **FM (USA):**

  Installation:

  Class I, Division 2, Groups A, B, C, D, T4

- **cFM (Canada):**

  Installation:

  Class I, Division 2, Groups A, B, C, D, T4

- **ATEX:**

  II 3G Ex nA IIC T4 Gc

  II 3G Ex ec IIC T4 Gc

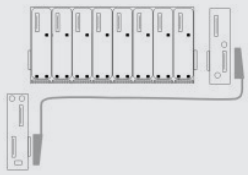
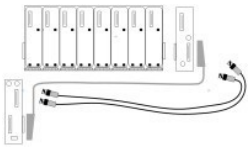
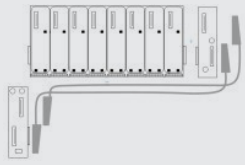
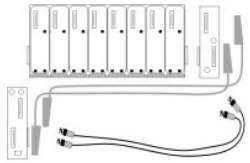
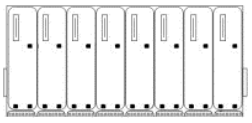
*Regarding the Installation instructions please refer to the following Documents: Class 1 Division 2 Installation Instructions DeltaV M-series (12P1293) Zone 2 Installation Instructions DeltaV M-series (12P2046)*

## System Compatibility

M-series I/O carriers are not physically compatible with S-series controller carriers, except when used with the DeltaV SIS Adapter.

The M-series controllers cannot detect the difference between an 8-wide and a 4-wide carrier. If a 4-wide carrier is used, the four I/O slots after the slots on the carrier will be lost to an M-series controller. If either a 4-wide or 8 wide carrier is connected after a 4-wide carrier, the first slot number will be 5 numbers higher than the last slot on the 4-wide carrier. For example, if a controller has a 4-wide carrier followed by an 8-wide carrier, the slots on the 4-wide carrier will be 1, 2, 3, and 4, and the slots on the 8-wide carrier will be slots 9, 10, 11, 12, 13, 14, 15, 16. The PK Controller does not have this behavior because it can distinguish between a 4-wide and an 8-wide carrier. However, there is still a limit of 8 total carriers (4-wides and/or 8-wides) on any controller.

## Ordering Information

| Description | View | Model Number |
|---|---|---|
| 8-Wide I/O Interface Carrier with Carrier Shield Bar |  | VE4050S2K1C0 |
| 8-Wide I/O Interface Carrier with Carrier Shield Bar and Single Enhanced Carrier Extender Cable. Cable is 1.2m |  | VE4050E1C0 |
| 8-Wide I/O Interface Carrier with Carrier Shield Bar, Single Enhanced Carrier Extender Cable, and Redundant SISNet Coax Cables. Cables are 1.2m. |  | VE4050E1C2 |
| 8-Wide I/O Interface Carrier with Dual Carrier Extension Cable and Carrier Shield Bar. Cables are 1.2m. |  | VE4050E2C0 |
| 8-Wide I/O Interface Carrier with Carrier Shield Bar, Dual Enhanced Carrier Extender Cables, and Redundant SISNet Coax Cables. Cables are 1.2m. |  | VE4050E2C2 |
| 4-Wide I/O Interface Carrier with Carrier Shield Bar and individual field power per card |  | VE4040E0C0 |
| 8-Wide I/O Interface Carrier with Carrier Shield Bar and individual field power per card |  | VE4050S2K1C2 |